

# EXHIBIT 1

**IN THE UNITED STATES DISTRICT COURT  
FOR THE DISTRICT OF WYOMING**

SWITCH, LTD., a Nevada limited liability  
company,

Plaintiff,

v.

LUNAVI, INC., a Wyoming corporation;  
GREEN HOUSE DATA, INC., a Wyoming  
corporation,  
FIFTEENFORTYSEVEN CRITICAL  
SYSTEMS REALTY LLC., a New Jersey  
corporation,  
JAMES TODD RAYMOND, an individual,

Defendants.

**Case No. 0:21-cv-00147-ABJ**

**DEMAND FOR JURY TRIAL**

**FIRST AMENDED COMPLAINT FOR PATENT INFRINGEMENT**

Plaintiff Switch, Ltd. (“Switch”) files this First Amended Complaint against Lunavi, Inc., formerly known as Green House Data, Inc. (“Green House” and together with Lunavi, Inc., “Lunavi”), Fifteenfortyseven Critical Systems Realty LLC (“1547”), and James Todd Raymond (“Raymond”) collectively (“Defendants”), for patent infringement under 35 U.S.C. § 271 and alleges as follows:

**THE PARTIES**

1. Switch is a limited liability company organized and existing under the laws of the State of Nevada, and maintains its principal place of business at 7135 S. Decatur Boulevard, Las Vegas, Nevada.

2. Defendant Lunavi, Inc. is a corporation organized and existing under the laws of Wyoming. Lunavi, Inc.’s principal place of business is located at 340 Progress Circle, Cheyenne,

WY 82007. At its data center locations, such as the ones it operates in Cheyenne, Wyoming and at 1 Ramland Rd, Orangeburg, NY 10962, Lunavi makes, uses, sells, offers to sell, and/or imports facilities and/or structures for managing heat that are accused of infringement in this case.

3. Defendant Green House Data, Inc. was a corporation organized and existing under the laws of Wyoming. Green House's principal place of business was located at 340 Progress Circle, Cheyenne, WY 82007. Green House had a regular and established place of business at 340 Progress Circle, Cheyenne, WY 82007 and at 1 Ramland Rd, Orangeburg, NY 10962. At its data center locations, such as the one it operated in Cheyenne, Wyoming and Orangeburg, New York, Green House made, used, sold, offered to sell, and/or imported facilities and/or structures for managing heat that are accused of infringement in this case.

4. Defendant Fifteenfortyseven Critical Systems Realty LLC is a corporation organized and existing under the laws of New Jersey. 1547's principal place of business is located at 96 Freneau Avenue, Matawan, NJ 07747. 1547 has a regular and established place of business at 340 Progress Circle, Cheyenne, WY 82007 and at 1 Ramland Rd, Orangeburg, NY 10962. At its data center locations, such as the one it built and owns in Cheyenne, Wyoming and Orangeburg, New York, 1547 makes, uses, sells, offers to sell, and/or imports facilities and/or structures for managing heat that are accused of infringement in this case.

5. Defendant James Todd Raymond is an individual who resides at 85 Buttonwood Dr, Fair Haven, NJ 07704. As CEO and Managing Director for 1547, Raymond has a regular and established place of business both at 340 Progress Circle, Cheyenne, WY 82007 and 1 Ramland Rd, Orangeburg, NY 10962. Raymond is also a member of the Board of Directors of Lunavi, Inc. Raymond, as a corporate officer of 1547 and member of the Board of Directors of Lunavi, Inc., who has directed tortious activities constituting the infringement of Switch's patents, is

vicariously liable for Lunavi and 1547's acts of infringement.

6. To Switch's knowledge and belief, Green House entered into a transaction with Deliveron whereby Green House merged with or acquired Deliveron and rebranded under the name Lunavi, Inc.. For all intents and purposes and for avoidance of doubt, all allegations asserted in this Complaint against Lunavi, Inc. are also asserted against Green House.

7. To Switch's knowledge and belief, Lunavi rents or otherwise obtained rights to use from 1547 the facilities and/or structures accused of infringement in this case.

8. To Switch's knowledge and belief, 1547 owns, manages, or otherwise exerts control over the facilities and/or structures accused of infringement in this case.

9. To Switch's knowledge and belief, Raymond directed 1547 and/or Lunavi to build the facilities and/or structures accused of infringement in this case.

### **JURISDICTION AND VENUE**

10. This is an action for patent infringement arising under the patent laws of the United States of America, 35 U.S.C. §§ 1, *et seq.* The Court has subject matter jurisdiction pursuant to 35 U.S.C. §§ 1331 and 1338(a).

11. This Court has personal jurisdiction over Defendants at least because Defendants have committed acts of patent infringement within the District of Wyoming where each Defendant maintains a regular and established place of business.

12. On information and belief, Defendants, either directly or indirectly through subsidiaries or intermediaries, each make, use, sell, offer to sell, and/or import structures that directly infringe one or more claims of the Asserted Patents in the District of Wyoming. For example, on information and belief, Defendants made and/or currently use infringing structures and facilities in from their business address located at 340 Progress Circle, Cheyenne, WY 82007.

Defendants have thus committed acts of patent infringement within this District.

13. Venue is also proper as to Defendants under 28 U.S.C. § 1400(b) at least because Defendants have committed acts of patent infringement within this District and maintain a regular and established place of business within the District, including at 340 Progress Circle, Cheyenne, WY 82007.

### **BACKGROUND**

14. Data centers are the physical infrastructure behind the World Wide Web. The Internet physically exists in data centers.

15. Switch is the world's leading technology infrastructure system, whose core business is the design, construction and operation of the most advanced and sustainable data centers on the planet.

16. Switch's inventor, founder and CEO has been praised as the world's most advanced data center designer, and Switch's facilities have received numerous accolades for their operational and aesthetic design. Two of Switch's data centers are the only carrier-neutral colocation facilities in the world to be certified Tier IV Design, Tier IV Facility and Tier IV Gold in Operational Excellence by the Uptime Institute; Switch is the world's only Tier 5 Platinum Data Center in the world; Switch is the only company recognized by Greenpeace in its last Clicking Clean report as having a 100% clean energy index; and Switch has been ranked as the World's No. 1 cloud campus by industry publication Data Center Frontier.<sup>1</sup>

17. Switch facilities provide state of the art power and cooling efficiencies and redundancies to power, cool, connect and protect the internet, without interruption and at dramatically lower costs. Some of these services are measured with an efficiency score the data

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<sup>1</sup> See <http://datacenterfrontier.com/top-10-cloud-campuses/>.

center industry refers to as a power usage effectiveness (the “PUE”). Switch’s data centers offer the industry’s lowest PUE at the lowest costs with the highest cabinet densities. This is largely due to Switch’s various intellectual properties, including hundreds of patented and patent pending claims, designs, and technologies.

18. Switch’s patented technologies have revolutionized data center space cooling to allow customers to deploy up to 30-50 KW per rack. In other words, Switch’s solutions allow up to **ten times** the traditional server density at less cost.

19. Switch offers various technologies including its 100% Hot Aisle Containment solution (the “Chimney Pod”). Summarily, the Chimney Pod completely segregates the hot air behind the servers, away from the air being cooled.

20. Switch’s patented cooling solution—protected by United States Patent Nos. 8,523,643 (the “’643 Patent”), 9,788,455 (the “’455 Patent”), 10,178,796 (the “’796 Patent”) and 10,356,939 (the “’939 Patent”) asserted herein (collectively, the “Asserted Patents” as further defined herein)—enables cooling of drastically higher power levels that significantly exceed those of traditional data centers. The ability to handle these increased densities allows for deployment of more power on less space, driving a higher return on capital.

### **THE ASSERTED PATENTS**

21. On September 3, 2013, the United States Patent and Trademark Office duly and legally issued the ’643 Patent to Switch Communications Group LLC entitled Electronic Equipment Data Center or Co-Location Facility Designs and Methods of Making and Using the Same,” attached as **Exhibit A**. Switch is the owner of all rights, title, and interest in the ’643 Patent.

22. On October 10, 2017, the United States Patent and Trademark Office duly and legally issued the ’455 Patent to Switch entitled Electronic Equipment Data Center or Co-Location

Facility Designs and Methods of Making and Using the Same,” attached as **Exhibit B**.

23. On January 8, 2019, the United States Patent and Trademark Office duly and legally issued the '796 Patent to Switch entitled Electronic Equipment Data Center or Co-Location Facility Designs and Methods of Making and Using the Same,” attached as **Exhibit C**.

24. On July 16, 2019, the United States Patent and Trademark Office duly and legally issued the '939 Patent to Switch entitled Electronic Equipment Data Center or Co-Location Facility Designs and Methods of Making and Using the Same,” attached as **Exhibit D**.

25. All issued patents as described in Exhibits A-D and as set forth in this section shall be collectively referred to herein as the “Asserted Patents”.

26. Switch owns all rights, title, and interest in and to the Asserted Patents, including the authority to bring suit to enforce the Asserted Patents, and accordingly possesses all rights of recovery.

### **FACTUAL ALLEGATIONS**

27. In or about September of 2015, 1547 CEO and Managing Director of 1547 J. Todd Raymond, acting in his own capacity and on behalf of 1547, toured facilities of Switch and observed the physical infrastructure of Switch’s patent pending data center technology.

28. Thereafter, Defendants built and/or directed the building of facilities in a modular fashion intentionally to copy and mimic Switch’s physical infrastructure, including, for example, the heat containment cabinet layout that creates a fully contained hot aisle between parallel rows of cabinets with Chimney Pods above the cabinets, and the Exterior Wall Penetrating HVAC systems, both of which are included in the Asserted Patents.

29. On March 11, 2020, after learning of Lunavi’s unauthorized infringement of Switch’s Asserted Patents, Switch sent a letter to Shawn Mills, CEO of Lunavi, to put Lunavi on

notice of Lunavi's infringement of Switch's rights and informing Lunavi of Switch's willingness to explore licensing of its patented technology. The letter specifically identified the '643 Patent, '455 Patent, and '796 Patents.

30. On information or belief, Lunavi's maintains a close business relationship with 1547 regarding the Cheyenne, Wyoming data center and informed 1547 of Switch's letter on or around the time it received Switch's letter.

31. Despite Switch's significant effort to avoid litigation on this issue, Lunavi has declined to license Switch's patented technology or cease its unauthorized infringement of Switch's patented technology.

32. In or about September of 2020, Switch discovered that Green House had rebranded itself as Lunavi, Inc. following, on information and belief, a merger/acquisition with Deliveron, LLC, a Nebraska limited liability company, and/or Deliveron Consulting Services, Inc., a Nebraska corporation, both having a principal office address at 11516 Miracle Hills Drive, Suite 201, Omaha, Nebraska 68154.

### **CAUSES OF ACTION**

#### **Count I: Infringement of U.S. Patent No. 10,356,939 (against Lunavi and 1547)**

33. Switch repeats and realleges the allegations contained in paragraphs 1-32 above.

34. On information and belief, Lunavi and 1547 directly or through subsidiaries or intermediaries under their direction and control, make, use, sell, offer to sell, and/or import structures that infringe one or more claims of the '939 Patent, literally and/or under the doctrine of equivalents.

35. Lunavi and 1547 infringe at least one claim of the '939 patent. For example, Claim 1 of the '939 patent recites the following limitations:



1. A structure for managing heat emitted by electronic equipment disposed within a room having a ceiling, comprising:

at least one cluster of cabinets formed by two separated rows of cabinets such that the rows of cabinets are positioned in a cabinet back to cabinet back configuration to form a hot aisle enclosure area, such that electronic equipment located within the cabinets generate heated air which is emitted from the cabinets into the hot aisle enclosure area and a front side of the cabinets faces a cold aisle, such that air in the cold aisle is at a temperature that is less than air in the hot aisle enclosure area;

a plurality of support brackets disposed along each of the two rows of the at least one cluster of cabinets;

at least one closure element located at an end of the rows of cabinets, such that the at least one closure element is perpendicular to the two separated rows, and the at least one closure element in combination with the two separated rows of cabinets establishing the hot aisle enclosure area;

a thermal shield comprising a plurality of panels extending upward from the top of the cabinets to form a hot air path above the hot aisle enclosure area, a portion of the plurality of panels supported by the support brackets, plurality of panels forming a contiguous wall above the two separated rows of cabinets that surrounds the hot air path to cause substantially all of the heated air bounded by the two separated rows and the at least one closure element to be contained within the hot aisle enclosure area and the hot air path, such that the heated air rises from the hot aisle enclosure area, through the hot air path, and above the top edge of the thermal shield,

and, an air conditioning system delivering cold air to the cold aisle through a cold air duct.

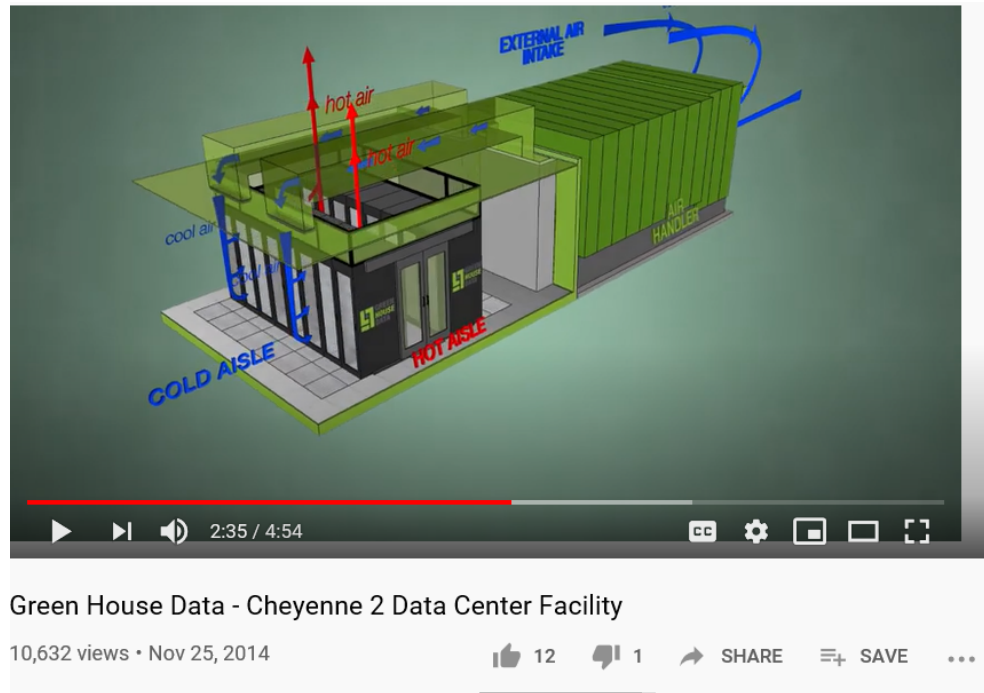
36. The promotional photograph below from Lunavi's website shows how Lunavi and 1547's facilities are built for customers to place their servers (i.e., electronic equipment) within

clusters of cabinets each of which has a thermal shield (including the semi-transparent panels supported by black brackets visible in the photograph) extending upward from the top of the cabinets:



Source: <https://www.lunavi.com/data-center/colocation-services> (last visited Nov. 17, 2020).

37. As shown with greater detail in, for example, the promotional materials (below) for Lunavi and 1547's Cheyenne, Wyoming data center (published by Lunavi while formerly known as Green House Data), Lunavi and 1547's data centers arrange cabinets into structures for managing heat emitted by electronic equipment within the cabinets, wherein cabinet clusters are formed from two separated rows of cabinets, with a perpendicular closure element located at an end of the two rows to establish a "hot aisle" enclosure area within the cabinet cluster through which hot air is vented from the electronic equipment (as depicted with the red arrows below):



Source: <https://www.youtube.com/watch?v=zufUWIt-SrY> at 2:35 (last visited Nov. 3, 2020).

38. As alleged above, Lunavi and 1547's data centers also include an air conditioning system delivering cold air to the cold aisle (see blue arrows and annotations above) outside of each cluster of cabinets through a cold air duct.

39. As also shown in the image above, the thermal shield above the cabinets forms a path through which hot air from the hot aisle rises as shown by the red arrows in the figure.

40. The electronic equipment within the cabinets is shown more clearly in the image below from the same promotional video:



Green House Data - Cheyenne 2 Data Center Facility

10,632 views • Nov 25, 2014

12 1 SHARE SAVE ...

Source: <https://www.youtube.com/watch?v=zufUWIt-SrY> at 1:34 (last visited Nov. 3, 2020).

41. Thus, Lunavi and 1547's Cheyenne, Wyoming data center, for example, infringes claim 1 of the '939 patent also because it includes structures for managing heat emitted by electronic equipment disposed within a room having a ceiling, comprising at least one cluster of cabinets formed by two separated rows of cabinets such that the rows of cabinets are positioned in a cabinet back to cabinet back configuration to form a hot aisle enclosure area, such that electronic equipment (e.g., servers) located within the cabinets generate heated air which is emitted from the cabinets into the hot aisle enclosure area and a front side of the cabinets faces a cold aisle, such that air in the cold aisle is at a temperature that is less than air in the hot aisle enclosure area; a plurality of support brackets (e.g., the frame elements for the panels above the cabinets) disposed along each of the two rows of the at least one cluster of cabinets; at least one closure element located at an end of the rows of cabinets (i.e., the wall with door perpendicular to the two parallel

rows of cabinets), such that the at least one closure element is perpendicular to the two separated rows, and the at least one closure element in combination with the two separated rows of cabinets establishing the hot aisle enclosure area (i.e., the space formed within the cabinet enclosure where the cabinets emit the hot air from the electronic equipment); a thermal shield comprising a plurality of panels (the semi-transparent panels in both the figure and photograph) extending upward from the top of the cabinets to form a hot air path above the hot aisle enclosure area, a portion of the plurality of panels supported by the support brackets, the plurality of panels forming a contiguous wall above the two separated rows of cabinets that surrounds the hot air path to cause substantially all of the heated air bounded by the two separated rows and the at least one closure element to be contained within the hot aisle enclosure area and the hot air path, such that the heated air rises from the hot aisle enclosure area, through the hot air path, and above the top edge of the thermal shield (shown with red arrows in Lunavi's promotional materials), and, an air conditioning system delivering cold air to the cold aisle through a cold air duct (shown with blue arrows in Lunavi's promotional materials).

42. As shown in the image below, Lunavi and 1547's Orangeburg, New York data center similarly infringes claim 1 of the '939 patent:



Source: <https://www.youtube.com/watch?v=geCjQN-zeDk> at 1:57 (last visited Nov. 3, 2020).

43. Lunavi and 1547's Orangeburg, New York data center infringes claim 1 of the '939 patent because it includes structures for managing heat emitted by electronic equipment disposed within a room having a ceiling, comprising at least one cluster of cabinets formed by two separated rows of cabinets such that the rows of cabinets are positioned in a cabinet back to cabinet back configuration to form a hot aisle enclosure area, such that electronic equipment (e.g., servers) located within the cabinets generate heated air which is emitted from the cabinets into the hot aisle enclosure area and a front side of the cabinets faces a cold aisle, such that air in the cold aisle is at a temperature that is less than air in the hot aisle enclosure area; a plurality of support brackets (i.e., the frame elements for the panels above the cabinets) disposed along each of the two rows of the at least one cluster of cabinets (i.e., the wall with door perpendicular to the two parallel rows of cabinets); at least one closure element located at an end of the rows of cabinets, such that the at least one closure element is perpendicular to the two separated rows, and the at least one closure element in combination with the two separated rows of cabinets establishing the hot aisle enclosure

area (i.e., the space formed within the cabinet enclosure where the cabinets emit the hot air from the electronic equipment); a thermal shield comprising a plurality of panels extending upward from the top of the cabinets to form a hot air path above the hot aisle enclosure area, a portion of the plurality of panels supported by the support brackets, plurality of panels forming a contiguous wall above the two separated rows of cabinets that surrounds the hot air path to cause substantially all of the heated air bounded by the two separated rows and the at least one closure element to be contained within the hot aisle enclosure area and the hot air path, such that the heated air rises from the hot aisle enclosure area, through the hot air path, and above the top edge of the thermal shield, and, an air conditioning system delivering cold air to the cold aisle through a cold air duct.

44. Accordingly, Lunavi and 1547's data centers include structures that meet each and every element of at least one claim of the '939 patent either literally or under the doctrine of equivalents.

45. Lunavi has had knowledge and notice of the '939 Patent and its infringement since at least the filing and service of the Complaint, and despite this knowledge continues to commit the aforementioned infringing acts.

46. 1547 has had knowledge and notice of the '939 Patent and its infringement since at least the filing and service of the Amended Complaint, and despite this knowledge continues to commit the aforementioned infringing acts.

47. On information and belief, Lunavi also had pre-suit knowledge and notice of the '939 Patent and its infringement because Switch specifically identified earlier issued members of the same patent family in its March 11, 2020 letter to Lunavi, and Lunavi's outside counsel spent several months reviewing Switch's patents.

48. On information and belief, 1547 had pre-suit knowledge of the '939 Patent and its



infringement because Raymond, having toured the facilities of Switch in 2015 and observed the physical infrastructure of Switch's patent pending data center technology and as a member of the Board of Directors of Lunavi and as CEO of 1547, also would have seen the March 11, 2020 letter, and later the Complaint when Lunavi was served with the Complaint.

49. Lunavi and 1547's past and continued acts of infringement of the '939 Patent have caused damages to Switch. Thus, Switch is entitled to recover damages from Lunavi and 1547 in an amount to be determined at trial, including but not limited to lost profits, but in no event less than a reasonable royalty for Defendants' infringement together with interest and costs as fixed by the Court pursuant to 35 U.S.C. § 284.

50. Upon information and belief, such infringement has been, and will continue to be willful, and upon further belief, Lunavi and 1547 lack any reasonable invalidity or non-infringement defense making this case exceptional and entitling Switch to increased damages and reasonable attorneys' fees pursuant to 35 U.S.C. §§ 284 and 285.

51. Lunavi and 1547's ongoing infringement of the '939 patent has caused and will continue to cause irreparable harm to Switch unless and until the Court enters an injunction prohibiting Lunavi and 1547 from engaging in further acts of infringement.

**Count II: Infringement of U.S. Patent No. 10,178,796 (against Lunavi and 1547)**

52. Switch repeats and realleges the allegations contained in paragraphs 1-51 above.

53. On information and belief, Lunavi and 1547 either directly or indirectly through subsidiaries or intermediaries under their direction and control, make, use, sell, offer to sell, and/or import structures that infringe one or more claims of the '796 Patent, literally and/or under the doctrine of equivalents.

54. Lunavi and 1547's data centers infringe at least one claim of the '796 patent. For



example, Claim 12 of the '796 patent recites the following limitations:

12. A structure for managing heat emitted by electronic equipment comprising:

at least one cluster of cabinets disposed in two separated rows of cabinets are positioned in a back-to-back configuration to establish a hot aisle enclosure area between the two separated rows of cabinets and a front side of the cabinets establishes a portion of a cold aisle;

electronic equipment disposed in the cabinets to emit heated air from the cabinets into the hot aisle enclosure area;

a thermal shield extending upward from the cabinets to form a hot air area by providing a contiguous wall at a height above the two separated rows of cabinets to trap heated air within the hot air area and the hot aisle enclosure area and cause substantially all of the heated air between the cabinets to be contained within the hot air area and the hot aisle enclosure area;

a warm air path disposed above the hot air area, the warm air path allowing heated air to flow from the hot air area to one or more air conditioning systems;

a cool air path between the one or more air conditioning systems and the cold aisle, the cool air path delivering cool air from the air conditioning system to the cold aisle; and

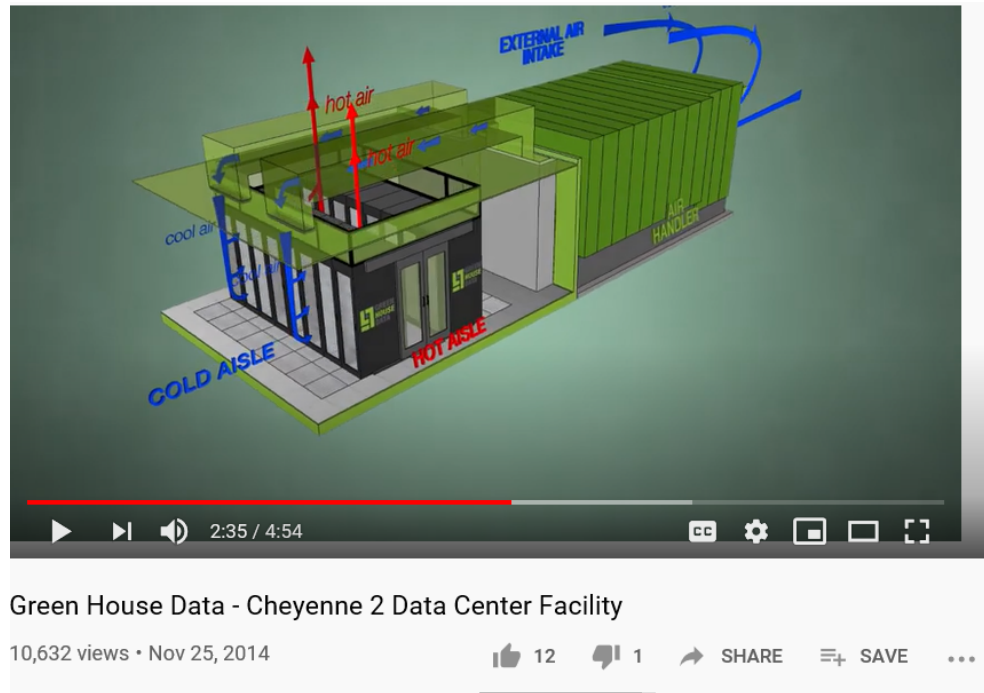
one or more support brackets disposed along each of the two separated rows of the at least one cluster of cabinets which support the thermal shield.

55. The promotional photograph below from Lunavi's website shows how Lunavi and 1547's facilities are built for customers to place their servers (i.e., electronic equipment) within clusters of cabinets configured in back-to-back rows each of which has a thermal shield (including the semi-transparent panels supported by black brackets visible in the photograph) extending upward from the top of the cabinets:



Source: <https://www.lunavi.com/data-center/colocation-services> (last visited Nov. 17, 2020).

56. As shown with greater detail in, for example, the promotional materials (below) for Lunavi and 1547's Cheyenne, Wyoming data center (published by Lunavi while formerly known as Green House Data), Lunavi and 1547's data centers arrange cabinets into structures for managing heat emitted by electronic equipment within the cabinets, wherein cabinet clusters are formed from two separated rows of cabinets, to establish a "hot aisle" enclosure area within the cabinet cluster through which hot air is vented from the electronic equipment (as depicted with the red arrows below):

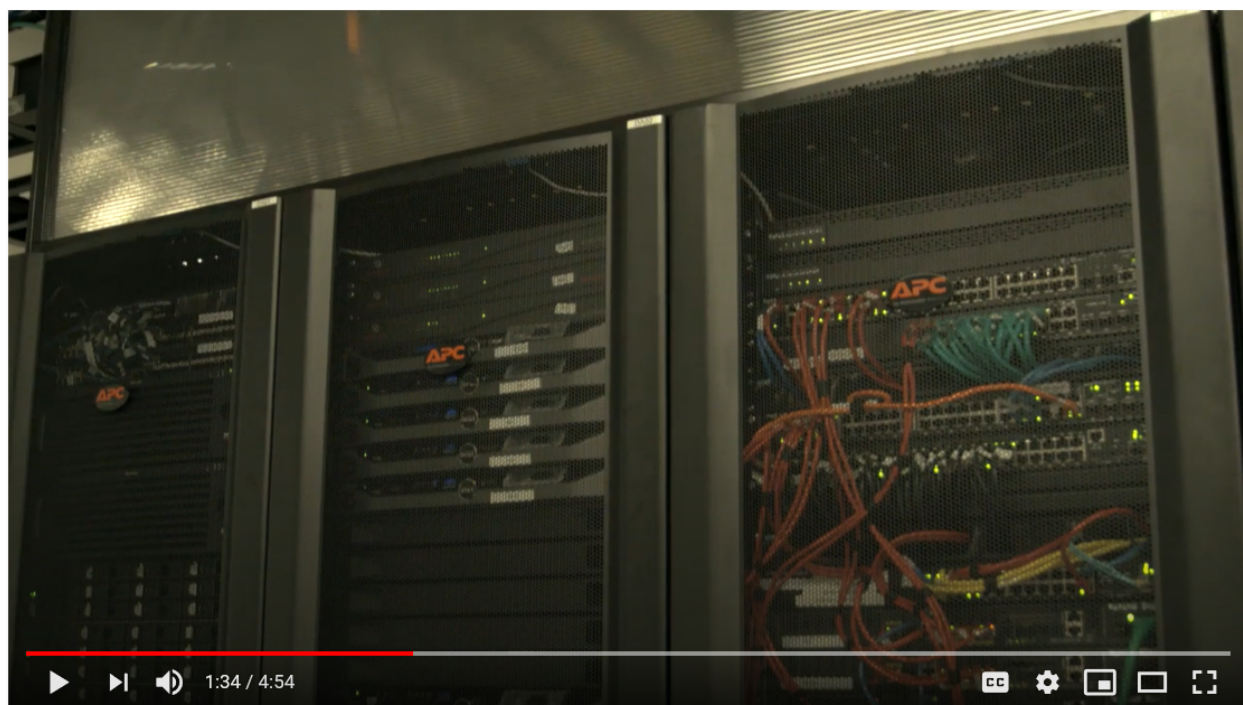


Source: <https://www.youtube.com/watch?v=zufUWIt-SrY> at 2:35 (last visited Nov. 3, 2020).

57. As shown above, Lunavi and 1547's data centers also include a warm air path allowing heated air to flow to an air conditioning system delivering cool air to the cold aisle (see blue arrows and annotations above) outside of each cluster of cabinets through a cold air path.

58. As also shown in the image above, the thermal shield above the cabinets forms a path through which hot air from the hot aisle rises as shown by the red arrows in the figure.

59. The electronic equipment within the cabinets is shown more clearly in the image below from the same promotional video:



Green House Data - Cheyenne 2 Data Center Facility

10,632 views • Nov 25, 2014

12 1 SHARE SAVE ...

Source: <https://www.youtube.com/watch?v=zufUWIt-SrY> at 1:34 (last visited Nov. 3, 2020).

60. The images below shows support brackets along the rows which support the thermal shield:





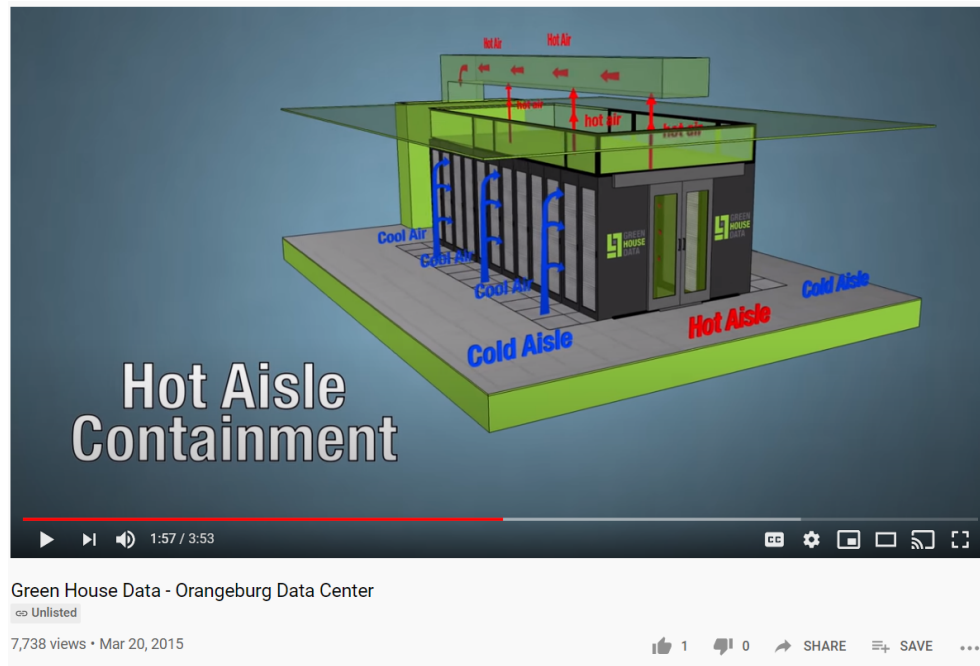
Source: <https://www.youtube.com/watch?v=yhsHmtW5QFw> at 0:00 to 0:04 (last visited November 3, 2020).

61. Thus, Lunavi and 1547's Cheyenne, Wyoming data center, for example, infringes claim 12 of the '796 patent because it includes structures for managing heat emitted by electronic equipment with clusters of cabinets disposed in two separated rows of back-to-back cabinets to form a hot aisle enclosure area, with electronic equipment (e.g., servers) located within the cabinets that generate heated air which is emitted from the cabinets into the hot aisle enclosure area and a front side of the cabinets faces a cold aisle; a thermal shield (the semi-transparent panels in both the figure and photograph) extending upward from the top of the cabinets to form a hot air area above the hot aisle enclosure area, forming a contiguous wall above the two separated rows of cabinets that surrounds the hot air area to cause substantially all of the heated air between the cabinets to be contained within the hot aisle enclosure area and the hot air area; a warm air path disposed above the hot air area, the warm air path allowing heated air to flow from the hot air area to one or more air conditioning systems (shown with red arrows in Lunavi's promotional materials); a cool air path between the one or more air conditioning systems and the cold aisle, the cool air path delivering cool air from the air conditioning system to the cold aisle (shown with blue



arrows in Lunavi's promotional materials); a plurality of support brackets (e.g., the frame elements for the panels above the cabinets) disposed along each of the two rows of the at least one cluster of cabinets which support the thermal shield.

62. As shown in the image below, Lunavi and 1547's Orangeburg, New York data center similarly practices claim 12 of the '796 patent:



Source: <https://www.youtube.com/watch?v=geCjQN-zeDk> at 1:57 (last visited Nov. 3, 2020).

63. Lunavi and 1547's Orangeburg, New York data center infringes claim 12 of the '796 patent because it includes structures for managing heat emitted by electronic equipment comprising at least one cluster of cabinets disposed in two separated rows such that the two separated rows of cabinets are positioned in back-to-back configuration to establish a hot aisle enclosure area between the two separated rows of cabinets; electronic equipment (e.g., servers) located within the cabinets generate heated air which is emitted from the cabinets into the hot aisle enclosure area (i.e., the space formed within the cabinet enclosure where the cabinets emit the hot

air from the electronic equipment) and a front side of the cabinets establishes a portion of a cold aisle; a thermal shield extending upward from the cabinets to form a hot air area above the hot aisle enclosure area by providing a contiguous wall at a height above the two separated rows of cabinets to trap heated air within the hot air area and the hot aisle enclosure area and cause substantially all of the heated air between the cabinets to be contained within the hot air area and the hot aisle enclosure area; a warm air path disposed above the hot air area, the warm air path allowing heated air to flow from the hot air area to one or more air conditioning systems; a cool air path between the one or more air conditioning systems and the cold aisle, the cool air path delivering cool air from the air conditioning system to the cold aisle; and one or more support brackets (i.e., the frame elements for the panels above the cabinets) disposed along each of the two separated rows of the at least one cluster of cabinets (i.e., the wall with door perpendicular to the two parallel rows of cabinets) which support the thermal shield.

64. Accordingly, Lunavi and 1547's data centers include structures that meet each and every element of at least one claim of the '796 patent, either literally or under the doctrine of equivalents.

65. Lunavi has had knowledge and notice of the '796 Patent and its infringement since at least the filing and service of the Complaint, and despite this knowledge continues to commit the aforementioned infringing acts.

66. 1547 has had knowledge and notice of the '796 Patent and its infringement since at least the filing and service of the Amended Complaint, and despite this knowledge continues to commit the aforementioned infringing acts.

67. On information and belief, Lunavi also had pre-suit knowledge and notice of the '796 Patent and its infringement because Switch specifically identified the patent in its March 11,

2020 letter to Lunavi, and Lunavi's outside counsel spent several months reviewing Switch's patents.

68. On information and belief, 1547 had pre-suit knowledge of the '939 Patent and its infringement because Raymond, having toured the facilities of Switch in 2015 and observed the physical infrastructure of Switch's patent pending data center technology and as a member of the Board of Directors of Lunavi and as CEO of 1547, also would have seen the March 11, 2020 letter, and later the Complaint when Lunavi was served with the Complaint.

69. On information and belief, 1547 had pre-suit knowledge of the '796 Patent and its infringement because Raymond, as a member of the Board of Directors of Lunavi and as CEO of 1547, also would have seen the March 11, 2020 letter, and later the Complaint when Lunavi was served with the Complaint.

70. Lunavi and 1547's past and continued acts of infringement of the '796 Patent have caused damages to Switch. Thus, Switch is entitled to recover damages from Lunavi and 1547 in an amount to be determined at trial, including but not limited to lost profits, but in no event less than a reasonable royalty for Lunavi and 1547's infringement together with interest and costs as fixed by the Court pursuant to 35 U.S.C. § 284.

71. Upon information and belief, such infringement has been, and will continue to be willful, and upon further belief, Lunavi and 1547 lack any reasonable invalidity or non-infringement defense making this case exceptional and entitling Switch to increased damages and reasonable attorneys' fees pursuant to 35 U.S.C. §§ 284 and 285.

72. Lunavi and 1547's ongoing infringement of the '796 patent has caused and will continue to cause irreparable harm to Switch unless and until the Court enters an injunction prohibiting Lunavi and 1547 from engaging in further acts of infringement.



**Count III: Infringement of U.S. Patent No. 9,788,455 (against Lunavi and 1547)**

73. Switch repeats and realleges the allegations contained in paragraphs 1-72 above.

74. On information and belief, Lunavi and 1547 either directly or indirectly through subsidiaries or intermediaries under their direction and control, make, use, sell, offer to sell, and/or import structures that infringe one or more claims of the '455 Patent, literally and/or under the doctrine of equivalents.

75. Lunavi and 1547's data centers infringe at least one claim of the '455 patent. For example, Claim 1 of the '455 patent recites the following limitations:

1. A facility for maintaining electronic equipment disposed in at least one cluster of cage cabinets at a cool temperature using a plurality of air conditioning units, the at least one cluster of cage cabinets positioned in a back-to-back configuration in two separated rows so that the electronic equipment disposed therein emit heated air in a predetermined direction from the cage cabinets to establish a hot aisle enclosure area between the two separate rows of cage cabinets, and an opposite side of the cage cabinets each establishing a cold aisle, the plurality of air conditioning units receiving heated air and emitting cooled air, the facility comprising:

a floor on which the plurality of cage cabinets are disposed, wherein the at least one cluster of cage cabinets is disposed in the two separated rows to establish the hot aisle enclosure area, the floor being within a space that has walls that define a room;

a plurality of support brackets disposed along each of the two rows of the at least one cluster of cage cabinets, so that a portion of each of the support bracket is disposed above the at least one cluster of cage cabinets;

a thermal shield supported by the portion of at least some of the plurality of support brackets, the thermal shield providing a contiguous wall around a hot air area above the hot aisle

enclosure area at a height above the two separated rows of cage cabinets to define a warm exhaust channel that traps the heated air within the hot aisle enclosure area and causes substantially all the heated air within the hot aisle enclosure area to rise up within the warm exhaust channel, wherein the contiguous wall fully surrounds the hot aisle enclosure area from above the at least one cluster of cage cabinets;

a warm air escape channel disposed above the warm exhaust channel, the warm air escape channel feeding the heated air to the plurality of air conditioning units, wherein the warm air escape channel is bounded at a bottom by a ceiling that provides a barrier to prevent the heated air from passing therebelow, wherein an opening exists in the ceiling corresponding to the warm exhaust channel through which the heated air passes, and wherein a top edge of the thermal shield extends from the ceiling to the cage cabinets to further prevent the heated air from escaping; and

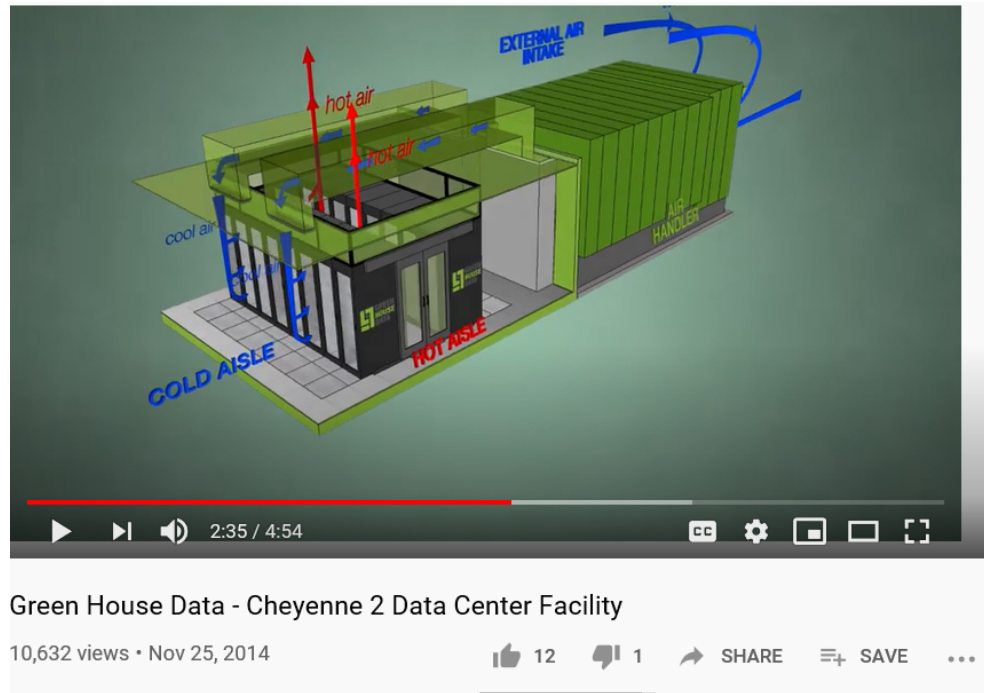
a cool air channel that connects between the air conditioning system and the cold aisle, the cool air channel delivering cool air from the plurality of air conditioning units to the cool aisle.

76. The promotional photograph below from Lunavi's website shows how Lunavi and 1547 maintain servers (i.e., electronic equipment) within clusters of cabinets configured in two separated back-to-back rows each of which has a thermal shield (including the semi-transparent panels supported by black brackets visible in the photograph) and support brackets extending upward from the top of the cabinets:



Source: <https://www.lunavi.com/data-center/colocation-services> (last visited Nov. 17, 2020).

77. As shown with greater detail in, for example, the promotional materials (below) for Lunavi and 1547's Cheyenne, Wyoming data center (published by Lunavi while formerly known as Green House Data), Lunavi and 1547's data centers arrange cabinets into structures for managing heat emitted by electronic equipment within the cabinets, wherein cabinet clusters are formed from two separated rows of cabinets, to establish a "hot aisle" enclosure area within the cabinet cluster through which hot air is vented from the electronic equipment (as depicted with the red arrows below):



Source: <https://www.youtube.com/watch?v=zufUWIt-SrY> at 2:35 (last visited Nov. 3, 2020).

78. As shown above, Lunavi and 1547's data centers also include a warm air escape channel allowing heated air to flow to an air conditioning system delivering cool air to the cold aisle (see blue arrows and annotations above) outside of each cluster of cabinets through a cold air channel.

79. As also shown in the image above, the thermal shield above the cabinets forms a warm air exhaust channel through which hot air from the hot aisle rises as shown by the red arrows in the figure.

80. The electronic equipment within the cabinets is shown more clearly in the image below from the same promotional video:



Green House Data - Cheyenne 2 Data Center Facility

10,632 views • Nov 25, 2014

12 1 SHARE SAVE ...

Source: <https://www.youtube.com/watch?v=zufUWIt-SrY> at 1:34 (last visited Nov. 3, 2020).

81. The images below show further evidence of support brackets along the rows which support the thermal shield:





Source: <https://www.youtube.com/watch?v=yhsHmtW5QFw> at 0:00 to 0:04 (last visited November 3, 2020).

82. Thus, Lunavi and 1547's Cheyenne, Wyoming data center, for example, infringes claim 1 of the '455 patent because it includes a facility for maintaining electronic equipment (e.g., servers) disposed in at least one cluster of cage cabinets at a cool temperature using a plurality of air conditioning units, the at least one cluster of cage cabinets positioned in a back-to-back configuration in two separated rows so that the electronic equipment disposed therein emit heated air in a predetermined direction from the cage cabinets to establish a hot aisle enclosure area between the two separate rows of cage cabinets, and an opposite side of the cage cabinets each establishing a cold aisle, the plurality of air conditioning units receiving heated air and emitting cooled air, the facility comprising: a floor on which the plurality of cage cabinets are disposed, wherein the at least one cluster of cage cabinets is disposed in the two separated rows to establish the hot aisle enclosure area, the floor being within a space that has walls that define a room; a plurality of support brackets (e.g., the frame elements for the panels above the cabinets) disposed along each of the two rows of the at least one cluster of cage cabinets, so that a portion of each of the support bracket is disposed above the at least one cluster of cage cabinets; a thermal shield (the



semi-transparent panels in both the figure and photograph) supported by the portion of at least some of the plurality of support brackets, the thermal shield providing a contiguous wall around a hot air area above the hot aisle enclosure area at a height above the two separated rows of cage cabinets to define a warm exhaust channel that traps the heated air within the hot aisle enclosure area and causes substantially all the heated air within the hot aisle enclosure area to rise up within the warm exhaust channel, wherein the contiguous wall fully surrounds the hot aisle enclosure area from above the at least one cluster of cage cabinets; a warm air escape channel (shown with red arrows in Lunavi's promotional materials) disposed above the warm exhaust channel, the warm air escape channel feeding the heated air to the plurality of air conditioning units, wherein the warm air escape channel is bounded at a bottom by a ceiling that provides a barrier to prevent the heated air from passing therebelow, wherein an opening exists in the ceiling corresponding to the warm exhaust channel through which the heated air passes, and wherein a top edge of the thermal shield extends from the ceiling to the cage cabinets to further prevent the heated air from escaping; and a cool air channel (shown with blue arrows in Lunavi's promotional materials) that connects between the air conditioning system and the cold aisle, the cool air channel delivering cool air from the plurality of air conditioning units to the cool aisle.

83. As shown in the image below, Lunavi and 1547's Orangeburg, New York data center similarly practices claim 1 of the '455 patent:



Source: <https://www.youtube.com/watch?v=geCjQN-zeDk> at 1:57 (last visited Nov. 3, 2020).

84. Lunavi and 1547's Orangeburg, New York data center infringes claim 1 of the '455 patent because it includes a facility for maintaining electronic equipment (e.g., servers) disposed in at least one cluster of cage cabinets at a cool temperature using a plurality of air conditioning units, the at least one cluster of cage cabinets positioned in a back-to-back configuration in two separated rows so that the electronic equipment disposed therein emit heated air in a predetermined direction from the cage cabinets to establish a hot aisle enclosure area (i.e., the space formed within the cabinet enclosure where the cabinets emit the hot air from the electronic equipment) between the two separate rows of cage cabinets, and an opposite side of the cage cabinets each establishing a cold aisle, the plurality of air conditioning units receiving heated air and emitting cooled air, the facility comprising: a floor on which the plurality of cage cabinets are disposed, wherein the at least one cluster of cage cabinets is disposed in the two separated rows to establish the hot aisle enclosure area, the floor being within a space that has walls that define a room; a plurality of



support brackets (e.g., the frame elements for the panels above the cabinets) disposed along each of the two rows of the at least one cluster of cage cabinets, so that a portion of each of the support bracket is disposed above the at least one cluster of cage cabinets; a thermal shield (the semi-transparent panels in both the figure and photograph) supported by the portion of at least some of the plurality of support brackets, the thermal shield providing a contiguous wall around a hot air area above the hot aisle enclosure area at a height above the two separated rows of cage cabinets to define a warm exhaust channel that traps the heated air within the hot aisle enclosure area and causes substantially all the heated air within the hot aisle enclosure area to rise up within the warm exhaust channel, wherein the contiguous wall fully surrounds the hot aisle enclosure area from above the at least one cluster of cage cabinets; a warm air escape channel (shown with red arrows in Lunavi's promotional materials) disposed above the warm exhaust channel, the warm air escape channel feeding the heated air to the plurality of air conditioning units, wherein the warm air escape channel is bounded at a bottom by a ceiling that provides a barrier to prevent the heated air from passing therebelow, wherein an opening exists in the ceiling corresponding to the warm exhaust channel through which the heated air passes, and wherein a top edge of the thermal shield extends from the ceiling to the cage cabinets to further prevent the heated air from escaping; and a cool air channel (shown with blue arrows in Lunavi's promotional materials) that connects between the air conditioning system and the cold aisle, the cool air channel delivering cool air from the plurality of air conditioning units to the cool aisle.

85. Accordingly, Lunavi and 1547's data centers include structures that meet each and every element of at least one claim of the '455 patent either literally or under the doctrine of equivalents.

86. Lunavi has had knowledge and notice of the '455 Patent and its infringement since

at least the filing and service of the Complaint, and despite this knowledge continues to commit the aforementioned infringing acts.

87. 1547 has had knowledge and notice of the '455 Patent and its infringement since at least the filing and service of the Amended Complaint, and despite this knowledge continue to commit the aforementioned infringing acts.

88. On information and belief, Lunavi also had pre-suit knowledge and notice of the '455 Patent and its infringement because Switch specifically identified the patent in its March 11, 2020 letter to Lunavi, and Lunavi's outside counsel spent several months reviewing Switch's patents.

89. On information and belief, 1547 had pre-suit knowledge of the '455 Patent and its infringement because Raymond, having toured the facilities of Switch in 2015 and observed the physical infrastructure of Switch's patent pending data center technology and as a member of the Board of Directors of Lunavi and as CEO of 1547, also would have seen the March 11, 2020 letter, and later the Complaint when Lunavi was served with the Complaint.

90. Lunavi and 1547's past and continued acts of infringement of the '455 Patent have caused damages to Switch. Thus, Switch is entitled to recover damages from Lunavi and 1547 in an amount to be determined at trial, including but not limited to lost profits, but in no event less than a reasonable royalty for Lunavi and 1547's infringement together with interest and costs as fixed by the Court pursuant to 35 U.S.C. § 284.

91. Upon information and belief, such infringement has been, and will continue to be willful, and upon further belief, Lunavi and 1547 lack any reasonable invalidity or non-infringement defense making this case exceptional and entitling Switch to increased damages and reasonable attorneys' fees pursuant to 35 U.S.C. §§ 284 and 285.

92. Lunavi and 1547's ongoing infringement of the '455 patent has caused and will continue to cause irreparable harm to Switch unless and until the Court enters an injunction prohibiting Lunavi and 1547 from engaging in further acts of infringement.

**Count IV: Infringement of U.S. Patent No. 8,523,643 (against Lunavi and 1547)**

93. Switch repeats and realleges the allegations contained in paragraphs 1-92 above.

94. On information and belief, Lunavi and 1547 either directly or indirectly through subsidiaries or intermediaries under their direction and control, make, use, sell, offer to sell, and/or import structures that infringe one or more claims of the '643 Patent, literally and/or under the doctrine of equivalents.

95. Lunavi and 1547's data centers infringe at least one claim of the '643 patent. For example, Claim 1 of the '643 patent recites the following limitations:

1. A facility with an internal area and an external area in an external environment for maintaining electronic equipment disposed in a plurality of cabinet clusters in the internal area at a cool temperature, the facility comprising: a building that includes an exterior load wall separating the internal area and the external area; a plurality of exterior wall openings in the exterior load wall; a floor within the internal area of the building on which the plurality of cabinet clusters are disposed; a plurality of cabinets for holding the electronic equipment therein, the plurality of cabinets positioned in a plurality of rows within each of a plurality of cabinet clusters so that the electronic equipment disposed within the cabinets emit heated air from the cabinets in each row of each cabinet cluster toward a central hot air area associated with each cabinet cluster; a plurality of support brackets within each cabinet cluster, disposed along each of the plurality of rows, that together provide support for distribution power wiring and conduits, and communication wiring, wherein a portion of each of the support brackets is disposed above the plurality of cabinets within

each cabinet cluster, and wherein some of the distribution power wiring and conduits string across other cabinets in other cabinet clusters; a thermal shield supported by the at least some of the plurality of support brackets within each cabinet cluster, the thermal shield providing a contiguous wall around the central hot air area and defining a hot air containment chamber that traps the heated air within the central hot air area and causes substantially all the heated air within the central hot air area to rise up within the hot air containment chamber for each cabinet cluster; a plurality of air conditioning units disposed in the external area outside the building that each receive heated air, emit cooled air, and emit vented air, wherein the vented air is released into the external environment; a warm air escape gap within the building disposed above the hot air containment chamber, the warm air escape gap feeding the heated air to the plurality of air conditioning units, the warm air escape gap being lowerly bounded by a false ceiling; cool air ducts within the building that couple to the plurality of air conditioning units and extend to cold aisles, the cool air ducts being disposed below the false ceiling and delivering cool air from the plurality of air conditioning units toward the plurality of rows of cabinets within each of the plurality of cabinet clusters; and warm air connectors and cool air duct connectors that respectively connect the warm air escape gap and the cold air ducts to the plurality of air conditioning units, and which pass through the plurality of exterior wall openings, wherein the plurality of rows within each cabinet cluster is two separated rows disposed in a back-to-back configuration, thereby establishing the central hot air area in between the two separated rows, such that the electronic equipment therein emit the heated air through a backside of the cabinet toward the central hot air area; and wherein the false ceiling provides a barrier to prevent the heated air from passing therebelow, and wherein an opening exists in the false ceiling corresponding to the hot air containment chamber through which the heated air passes, and wherein a top edge of the thermal shield for each cabinet cluster connects to the false

ceiling to further prevent the heated air from escaping.

96. The promotional photograph below from Lunavi's website shows how Lunavi and 1547 maintain servers (i.e., electronic equipment) within clusters of cabinets configured in back-to-back rows each of which has a thermal shield (including the semi-transparent panels supported by black brackets visible in the photograph) and support brackets extending upward from the top of the cabinets:

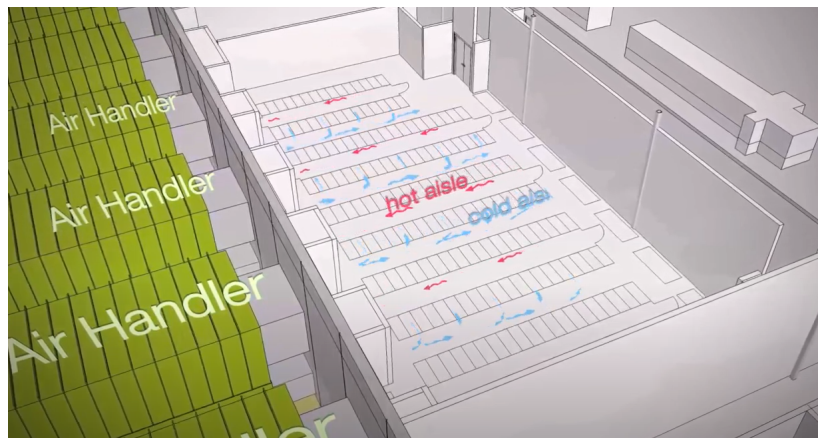


Source: <https://www.lunavi.com/data-center/colocation-services> (last visited Nov. 17, 2020).

97. The still images below captured from promotional videos on Lunavi's YouTube channel (published by Lunavi while formerly known as Green House Data), shows how Lunavi and 1547 maintain air conditioning units outside the building that receive heated air from warm air connectors and emit cooled air through cool air duct connectors:



Source: <https://www.youtube.com/watch?v=iiSu8VohlV0> at 1:49 to 2:24

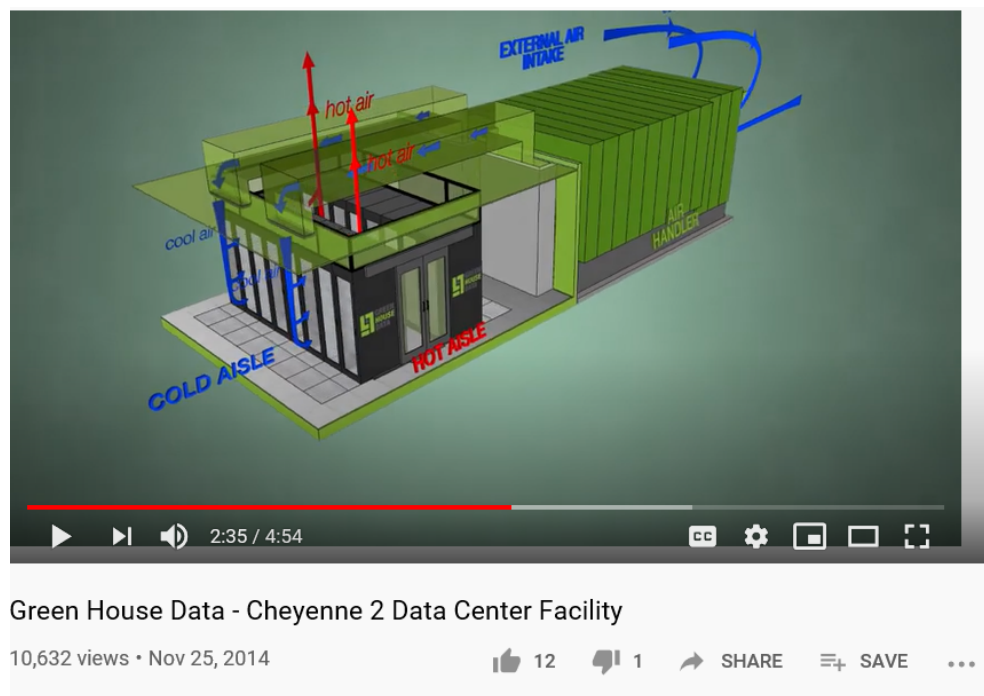


Source: <https://www.youtube.com/watch?v=yhsHmtW5QFw> at 2:52



Source: <https://www.youtube.com/watch?v=zufUWIt-SrY> at 2:27 to 2:30

98. As shown with greater detail in, for example, the promotional materials (below) for Lunavi and 1547's Cheyenne, Wyoming data center (published by Lunavi while formerly known as Green House Data), Lunavi and 1547's data centers arrange cabinets into structures for managing heat emitted by electronic equipment within the cabinets, wherein cabinet clusters are formed from rows of cabinets, and placed in the internal area of the facility to establish a "hot aisle" enclosure area within the cabinet cluster through which hot air is vented from the electronic equipment (as depicted with the red arrows below):



Source: <https://www.youtube.com/watch?v=zufUWIt-SrY> at 2:35 (last visited Nov. 3, 2020).

99. As shown above, Lunavi and 1547's data centers also include a warm air escape gap lowerly bounded by a false ceiling allowing heated air to flow through warm air connectors to air conditioning units which then deliver cool air through cool air ducts to the cold aisle (see blue arrows and annotations above) outside of each cluster of cabinets.

100. As also shown in the image above, the thermal shield above the cabinets forms a



hot air containment chamber through which hot air from the central hot air area rises through a top edge of the thermal shield and an opening in the false ceiling which provides a barrier to prevent the heated air from passing below, as shown by the red arrows in the figure.

101. The electronic equipment within the cabinets is shown more clearly in the image below from the same promotional video:



Green House Data - Cheyenne 2 Data Center Facility

10,632 views • Nov 25, 2014

12 1 SHARE SAVE ...

Source: <https://www.youtube.com/watch?v=zufUWIt-SrY> at 1:34 (last visited Nov. 3, 2020).

102. The images below show further evidence of support brackets along the rows which support the thermal shield and wiring and conduits for distribution power, electronic equipment power, and communications:





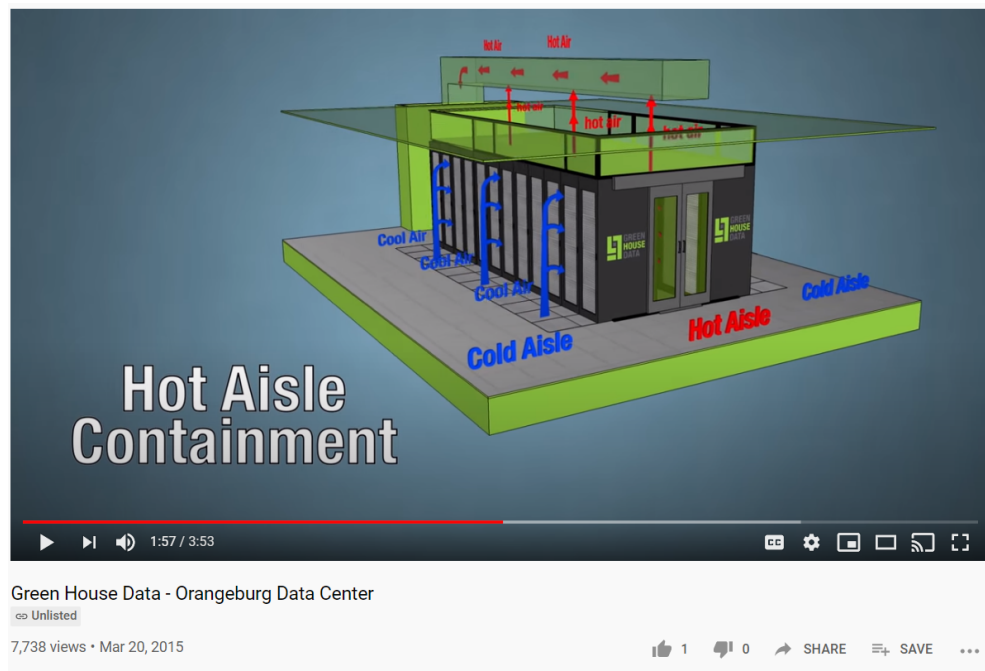
Source: <https://www.youtube.com/watch?v=yhsHmtW5QFw> at 0:00 to 0:04 (last visited November 3, 2020).

103. Thus, Lunavi and 1547's Cheyenne, Wyoming data center, for example, infringes claim 1 of the '643 patent because it includes a facility with an internal area and an external area in an external environment for maintaining electronic equipment (e.g., servers) disposed in a plurality of cabinet clusters in the internal area at a cool temperature, the facility comprising: a building that includes an exterior load wall separating the internal area and the external area; a plurality of exterior wall openings in the exterior load wall; a floor within the internal area of the building on which the plurality of cabinet clusters are disposed; a plurality of cabinets for holding the electronic equipment therein, the plurality of cabinets positioned in a plurality of rows within

each of a plurality of cabinet clusters so that the electronic equipment disposed within the cabinets emit heated air from the cabinets in each row of each cabinet cluster toward a central hot air area associated with each cabinet cluster; a plurality of support brackets (e.g., the frame elements for the panels above the cabinets) within each cabinet cluster, disposed along each of the plurality of rows, that together provide support for distribution power wiring and conduits, and communication wiring, wherein a portion of each of the support brackets is disposed above the plurality of cabinets within each cabinet cluster, and wherein some of the distribution power wiring and conduits string across other cabinets in other cabinet clusters; a thermal shield (the semi-transparent panels in both the figure and photograph) supported by the at least some of the plurality of support brackets within each cabinet cluster, the thermal shield providing a contiguous wall around the central hot air area and defining a hot air containment chamber that traps the heated air within the central hot air area and causes substantially all the heated air within the central hot air area to rise up within the hot air containment chamber for each cabinet cluster; a plurality of air conditioning units disposed in the external area outside the building that each receive heated air, emit cooled air, and emit vented air, wherein the vented air is released into the external environment; a warm air escape gap (shown with red arrows in Lunavi's promotional materials) within the building disposed above the hot air containment chamber, the warm air escape gap feeding the heated air to the plurality of air conditioning units, the warm air escape gap being lowerly bounded by a false ceiling; cool air ducts within the building that couple to the plurality of air conditioning units and extend to cold aisles, the cool air ducts (shown with blue arrows in Lunavi's promotional materials) being disposed below the false ceiling and delivering cool air from the plurality of air conditioning units toward the plurality of rows of cabinets within each of the plurality of cabinet clusters; and warm air connectors and cool air duct connectors that respectively connect the warm air escape gap and

the cold air ducts to the plurality of air conditioning units, and which pass through the plurality of exterior wall openings, wherein the plurality of rows within each cabinet cluster is two separated rows disposed in a back-to-back configuration, thereby establishing the central hot air area in between the two separated rows, such that the electronic equipment therein emit the heated air through a backside of the cabinet toward the central hot air area; and wherein the false ceiling provides a barrier to prevent the heated air from passing therebelow, and wherein an opening exists in the false ceiling corresponding to the hot air containment chamber through which the heated air passes, and wherein a top edge of the thermal shield for each cabinet cluster connects to the false ceiling to further prevent the heated air from escaping.

104. As shown in the image below, Lunavi and 1547's Orangeburg, New York data center similarly infringes claim 1 of the '643 patent:



Source: <https://www.youtube.com/watch?v=geCjQN-zeDk> at 1:57 (last visited Nov. 3, 2020).

105. Lunavi and 1547's Orangeburg, New York data center infringes claim 1 of the '643

patent because it includes a facility with an internal area and an external area in an external environment for maintaining electronic equipment (e.g., servers) disposed in a plurality of cabinet clusters in the internal area at a cool temperature, the facility comprising: a building that includes an exterior load wall separating the internal area and the external area; a plurality of exterior wall openings in the exterior load wall; a floor within the internal area of the building on which the plurality of cabinet clusters are disposed; a plurality of cabinets for holding the electronic equipment therein, the plurality of cabinets positioned in a plurality of rows within each of a plurality of cabinet clusters so that the electronic equipment disposed within the cabinets emit heated air from the cabinets in each row of each cabinet cluster toward a central hot air area (i.e., the space formed within the cabinet enclosure where the cabinets emit the hot air from the electronic equipment) associated with each cabinet cluster; a plurality of support brackets (e.g., the frame elements for the panels above the cabinets) within each cabinet cluster, disposed along each of the plurality of rows, that together provide support for distribution power wiring and conduits, and communication wiring, wherein a portion of each of the support brackets is disposed above the plurality of cabinets within each cabinet cluster, and wherein some of the distribution power wiring and conduits string across other cabinets in other cabinet clusters; a thermal shield (the semi-transparent panels in both the figure and photograph) supported by the at least some of the plurality of support brackets within each cabinet cluster, the thermal shield providing a contiguous wall around the central hot air area and defining a hot air containment chamber that traps the heated air within the central hot air area and causes substantially all the heated air within the central hot air area to rise up within the hot air containment chamber for each cabinet cluster; a plurality of air conditioning units disposed in the external area outside the building that each receive heated air, emit cooled air, and emit vented air, wherein the vented air is released into the

external environment; a warm air escape gap (shown with red arrows in Lunavi's promotional materials) within the building disposed above the hot air containment chamber, the warm air escape gap feeding the heated air to the plurality of air conditioning units, the warm air escape gap being lowerly bounded by a false ceiling; cool air ducts within the building that couple to the plurality of air conditioning units and extend to cold aisles, the cool air ducts (shown with blue arrows in Lunavi's promotional materials) being disposed below the false ceiling and delivering cool air from the plurality of air conditioning units toward the plurality of rows of cabinets within each of the plurality of cabinet clusters; and warm air connectors and cool air duct connectors that respectively connect the warm air escape gap and the cold air ducts to the plurality of air conditioning units, and which pass through the plurality of exterior wall openings, wherein the plurality of rows within each cabinet cluster is two separated rows disposed in a back-to-back configuration, thereby establishing the central hot air area in between the two separated rows, such that the electronic equipment therein emit the heated air through a backside of the cabinet toward the central hot air area; and wherein the false ceiling provides a barrier to prevent the heated air from passing therebelow, and wherein an opening exists in the false ceiling corresponding to the hot air containment chamber through which the heated air passes, and wherein a top edge of the thermal shield for each cabinet cluster connects to the false ceiling to further prevent the heated air from escaping.

106. Accordingly, Lunavi and 1547's data centers include structures that meet each and every element of at least one claim of the '643 patent either literally or under the doctrine of equivalents.

107. Lunavi has had knowledge and notice of the '643 Patent and its infringement since at least the filing and service of the Complaint, and despite this knowledge continues to commit

the aforementioned infringing acts.

108. 1547 has had knowledge and notice of the '643 Patent and its infringement since at least the filing and service of the Amended Complaint, and despite this knowledge continues to commit the aforementioned infringing acts.

109. On information and belief, Lunavi also had pre-suit knowledge and notice of the '643 Patent and its infringement because Switch specifically identified the patent in its March 11, 2020 letter to Lunavi, and Lunavi's outside counsel spent several months reviewing Switch's patents.

110. On information and belief, 1547 had pre-suit knowledge of the '643 Patent and its infringement because Raymond, having toured the facilities of Switch in 2015 and observed the physical infrastructure of Switch's patent pending data center technology and as a member of the Board of Directors of Lunavi and as CEO of 1547, also would have seen the March 11, 2020 letter, and later the Complaint when Lunavi was served with the Complaint.

111. Lunavi and 1547's past and continued acts of infringement of the '643 Patent have caused damages to Switch. Thus, Switch is entitled to recover damages from Lunavi and 1547 in an amount to be determined at trial, including but not limited to lost profits, but in no event less than a reasonable royalty for Lunavi and 1547's infringement together with interest and costs as fixed by the Court pursuant to 35 U.S.C. § 284.

112. Upon information and belief, such infringement has been, and will continue to be willful, and upon further belief, Lunavi and 1547 lack any reasonable invalidity or non-infringement defense making this case exceptional and entitling Switch to increased damages and reasonable attorneys' fees pursuant to 35 U.S.C. §§ 284 and 285.

113. Lunavi and 1547's ongoing infringement of the '643 patent has caused and will

continue to cause irreparable harm to Switch unless and until the Court enters an injunction prohibiting Lunavi and 1547 from engaging in further acts of infringement.

**Count V: Vicarious Liability Claims Against James Todd Raymond**

114. Switch repeats and realleges the allegations contained in paragraphs 1-113 above.

115. In or about September of 2015, Raymond, acting in his own capacity and on behalf of 1547, toured facilities of Switch and observed the physical infrastructure of Switch's patent pending data center technology

116. On information and belief, Raymond is a member of the Board of Directors of Lunavi and is CEO of 1547; as such he directs the activities of Lunavi and 1547. Actions Raymond has directed relative to Lunavi and 1547 constitute acts of patent infringement of U.S. Patent No. 10,356,939, as set forth in paragraphs 33-51 above. As a corporate officer of Lunavi and 1547 who has directed tortious acts, Raymond is vicariously liable for those acts of infringement.

117. On information and belief, Raymond is a member of the Board of Directors of Lunavi and is CEO of 1547; as such he directs the activities of Lunavi and 1547. Actions Raymond has directed relative to Lunavi and 1547 constitute acts of patent infringement of U.S. Patent No. 10,178,796, as set forth in paragraphs 52-72 above. As a corporate officer of Lunavi and 1547 who has directed tortious acts, Raymond is vicariously liable for those acts of infringement.

118. On information and belief, Raymond is a member of the Board of Directors of Lunavi and is CEO of 1547; as such he directs the activities of Lunavi and 1547. Actions Raymond has directed relative to Lunavi and 1547 constitute acts of patent infringement of U.S. Patent No. 9,788,455 as set forth in paragraphs 73-92 above. As a corporate officer of Lunavi and 1547 who has directed tortious acts, Raymond is vicariously liable for those acts of infringement.

119. On information and belief, Raymond is a member of the Board of Directors of



Lunavi and is CEO of 1547; as such he directs the activities of Lunavi and 1547. Actions Raymond has directed relative to Lunavi and 1547 constitute acts of patent infringement of U.S. Patent No. 8,523,643, as set forth in paragraphs 93-113 above. As a corporate officer of Lunavi and 1547 who has directed tortious acts, Raymond is vicariously liable for the acts of infringement committed by Defendants Lunavi and 1547.

### **PRAYER FOR RELIEF**

WHEREFORE, Switch demands judgment in its favor and against the Defendants and relief as follows:

1. Judgment under 35 U.S.C. § 271 that Defendants infringe one or more of the valid claims of the Asserted Patents;
2. Damages under 35 U.S.C. § 284 adequate to compensate Switch for Defendants' infringement of the Asserted Patents, including lost profit damages, but not less than a reasonable royalty;
3. That the Court find Lunavi and 1547's acts of infringement willful and award treble damages for such willful infringement pursuant to 35 U.S.C. § 284;
4. That the Court find James Todd Raymond vicariously liable for the acts of infringement by Lunavi and 1547;
5. A finding that this case is exceptional pursuant to 35 U.S.C. § 285;
6. An award of Switch's attorneys' fees incurred in this action pursuant to 35 U.S.C. § 285;
7. An award of costs and pre- and post-judgment interest on Switch's compensatory damages;

8. A permanent injunction against Lunavi and 1547 to prevent further infringement of the Asserted Patents; and

8. All other relief the Court deems just and proper.

**DEMAND FOR JURY TRIAL**

Switch demands a trial by jury pursuant to Fed. R. Civ. P. 38 on all issues so triable.

DATED:

Respectfully submitted,

By:

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